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(54) **COMPUTER DISPLAY INCLUDING A BEZEL**

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(51) **Int. Cl.**

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| ***H05K 7/00*** | (2006.01) |
| ***G06F 1/16*** | (2006.01) |
| *G02F 1/1333* | (2006.01) |

(52) **U.S. Cl.**

CPC ..... ***G06F 1/1601*** (2013.01); ***G06F 1/1605*** (2013.01); ***G06F 1/1607*** (2013.01); ***G06F 1/1683*** (2013.01); *G02F 2001/133322* (2013.01); *G02F 2001/133317* (2013.01)

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USPC ..... 361/679.21–679.3, 679.55–679.59; 312/223.1, 223.2; 349/58–60; 455/575.1

See application file for complete search history.

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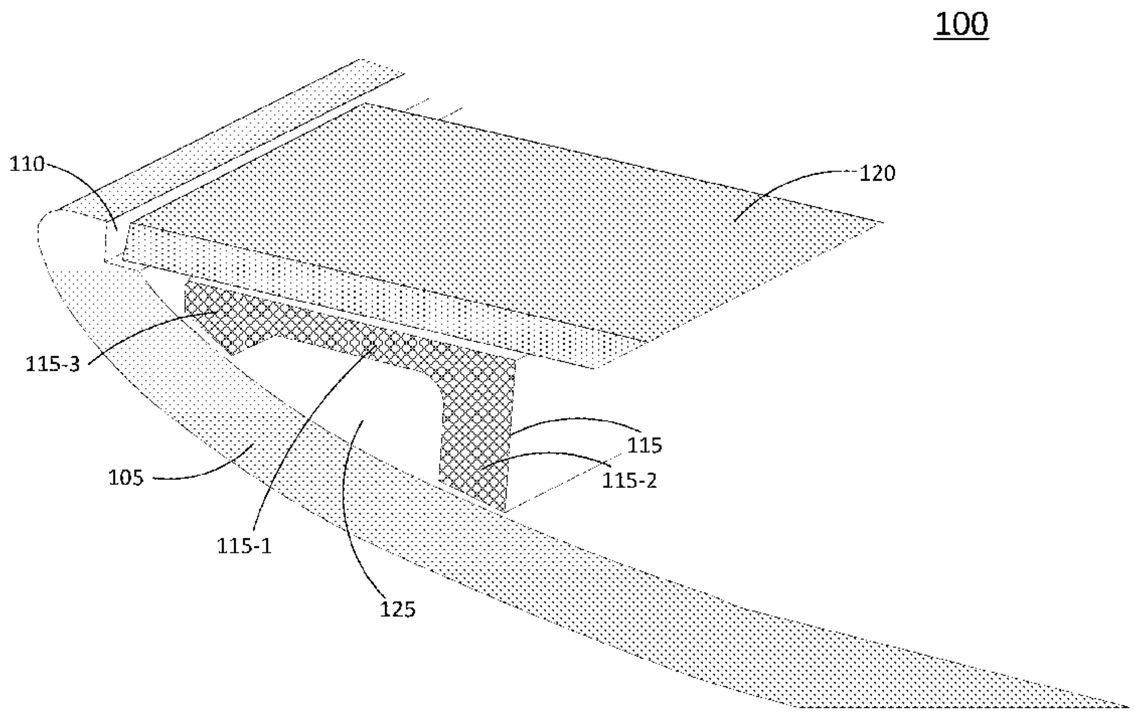
(57) **ABSTRACT**

The computer display includes a display case, a bezel, and a bezel frame in contact with the display case and the bezel, the bezel frame including at least one portion extending away from the bezel to a surface of the display case, the at least one portion defining at least a portion of a cavity.

**20 Claims, 13 Drawing Sheets**



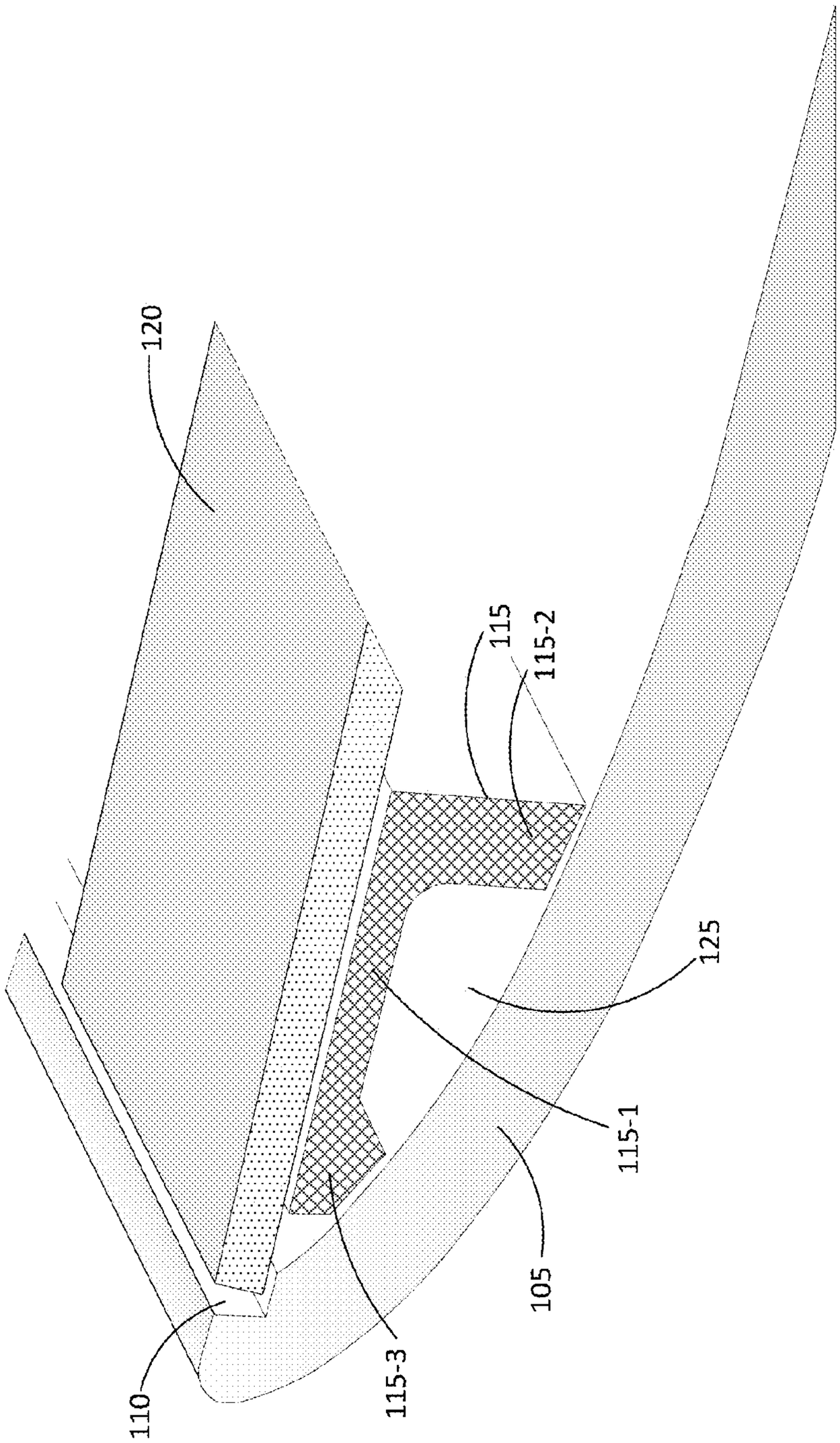



FIG. 1

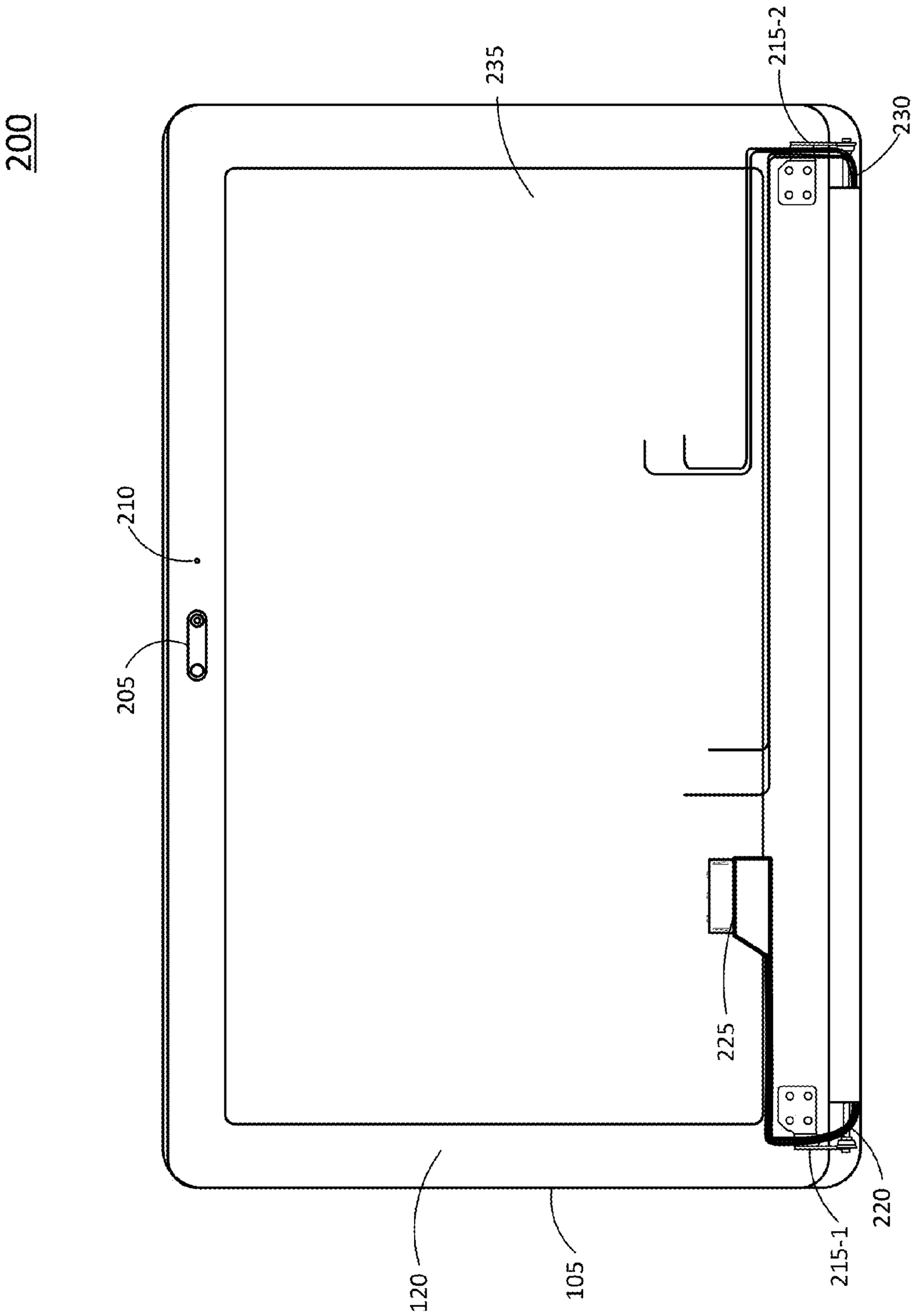
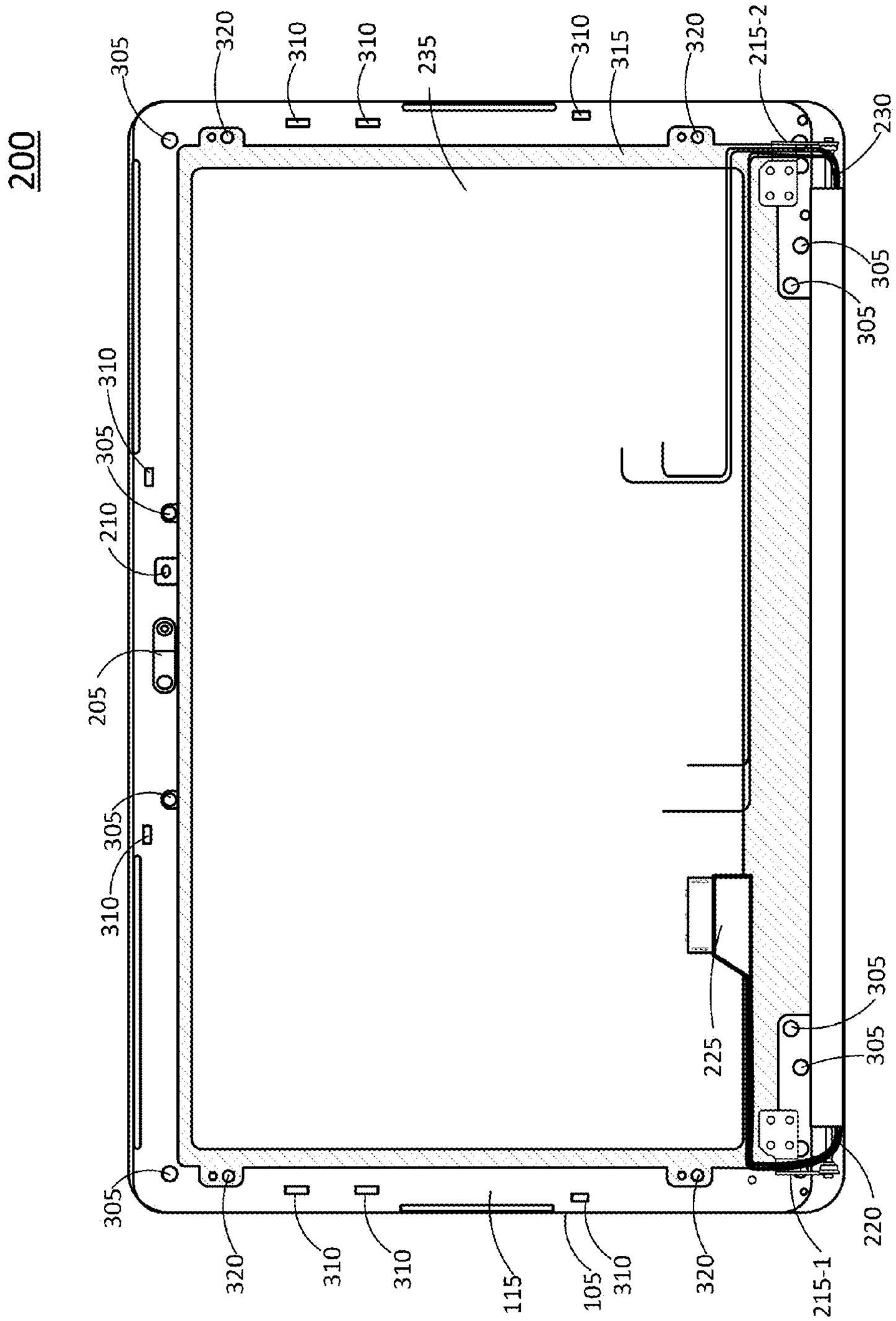



FIG. 2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305
320
310
310
235
310
315
320
215-2
230
305
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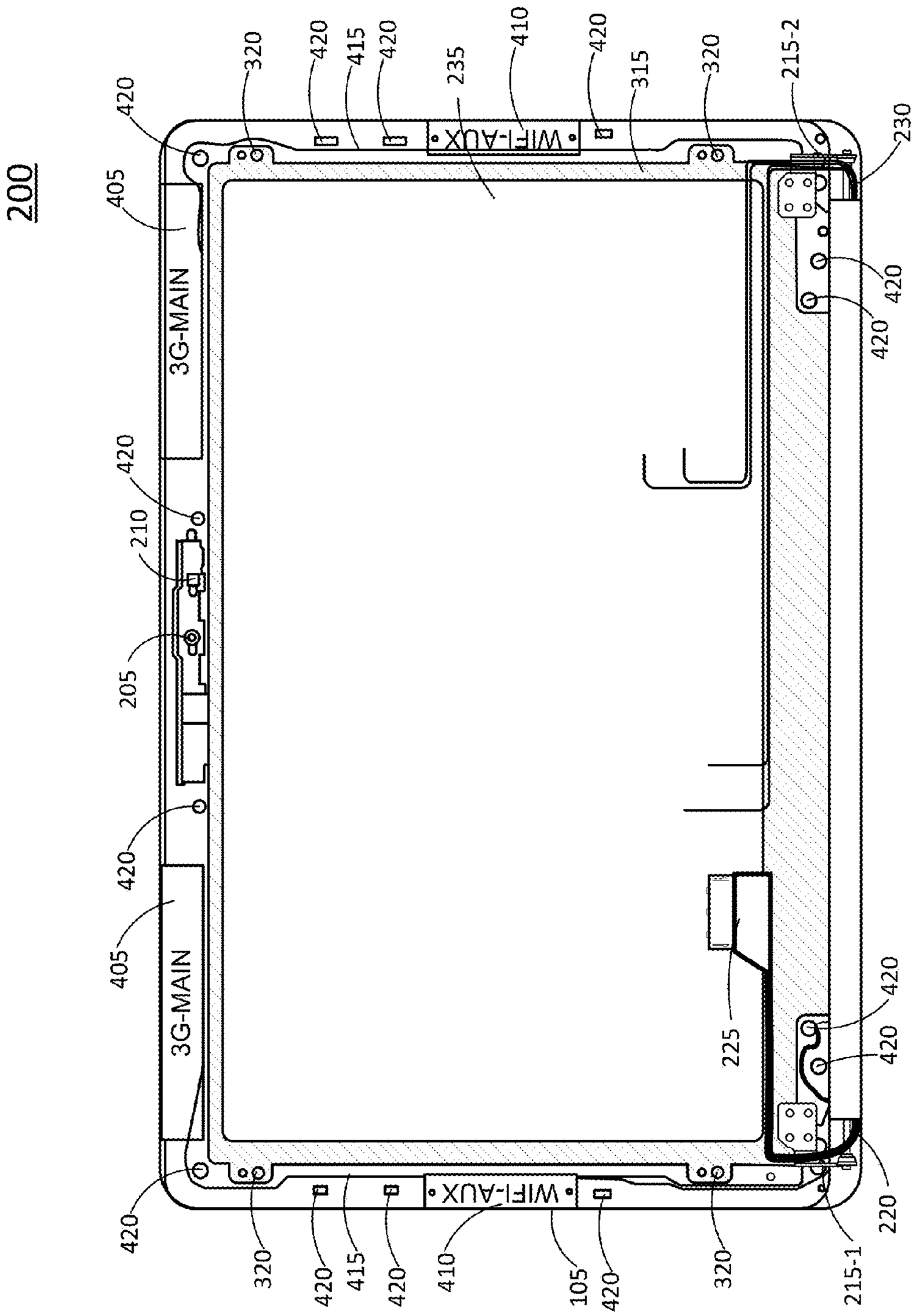
225
220
215-1
320
310
310
115
105
310
320
305
310
210
205
305
310

FIG. 3


200
405
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320
420
415
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410
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315
320
215-2
230
420
420
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420
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415
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220
420
420
225

FIG. 4

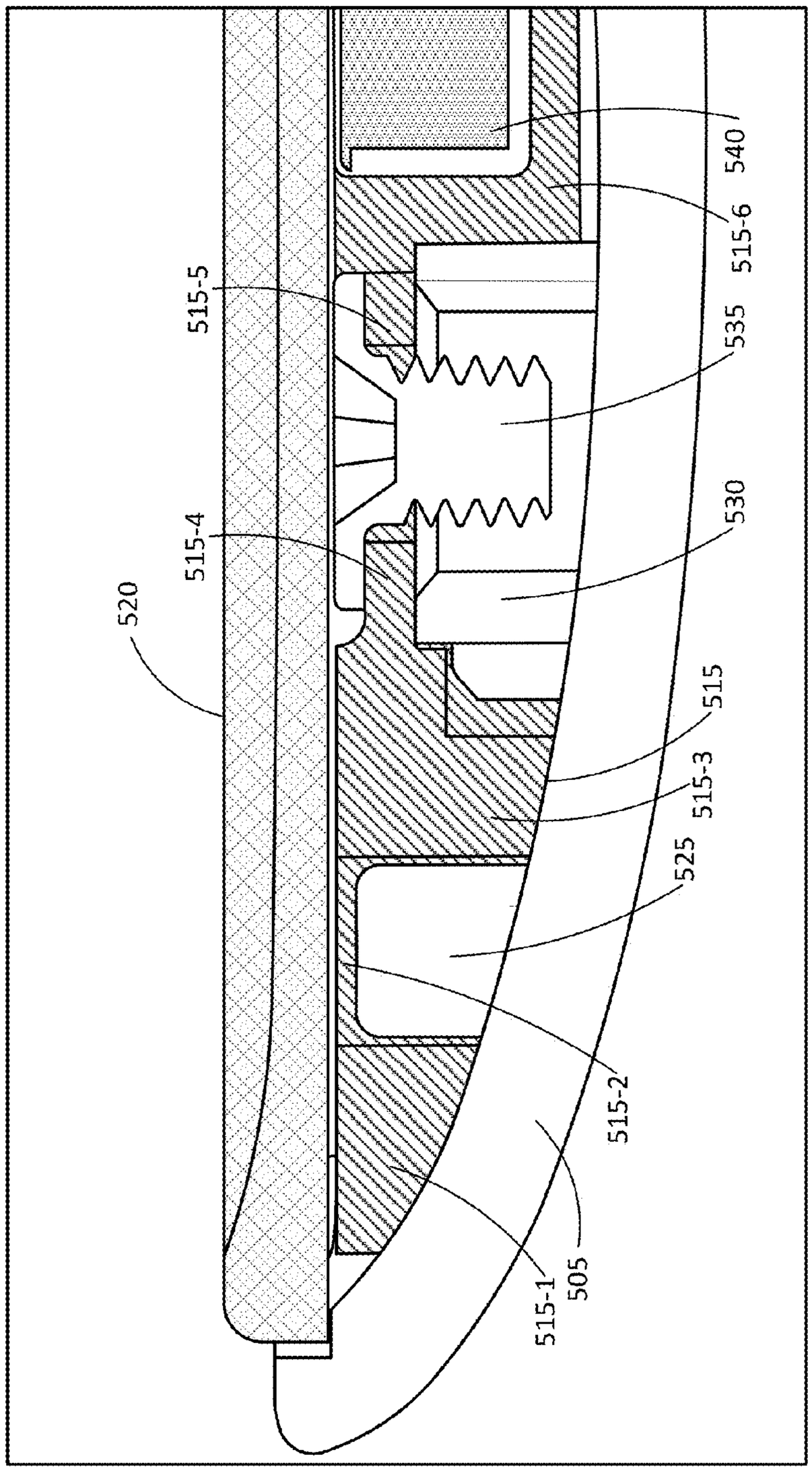



FIG. 5

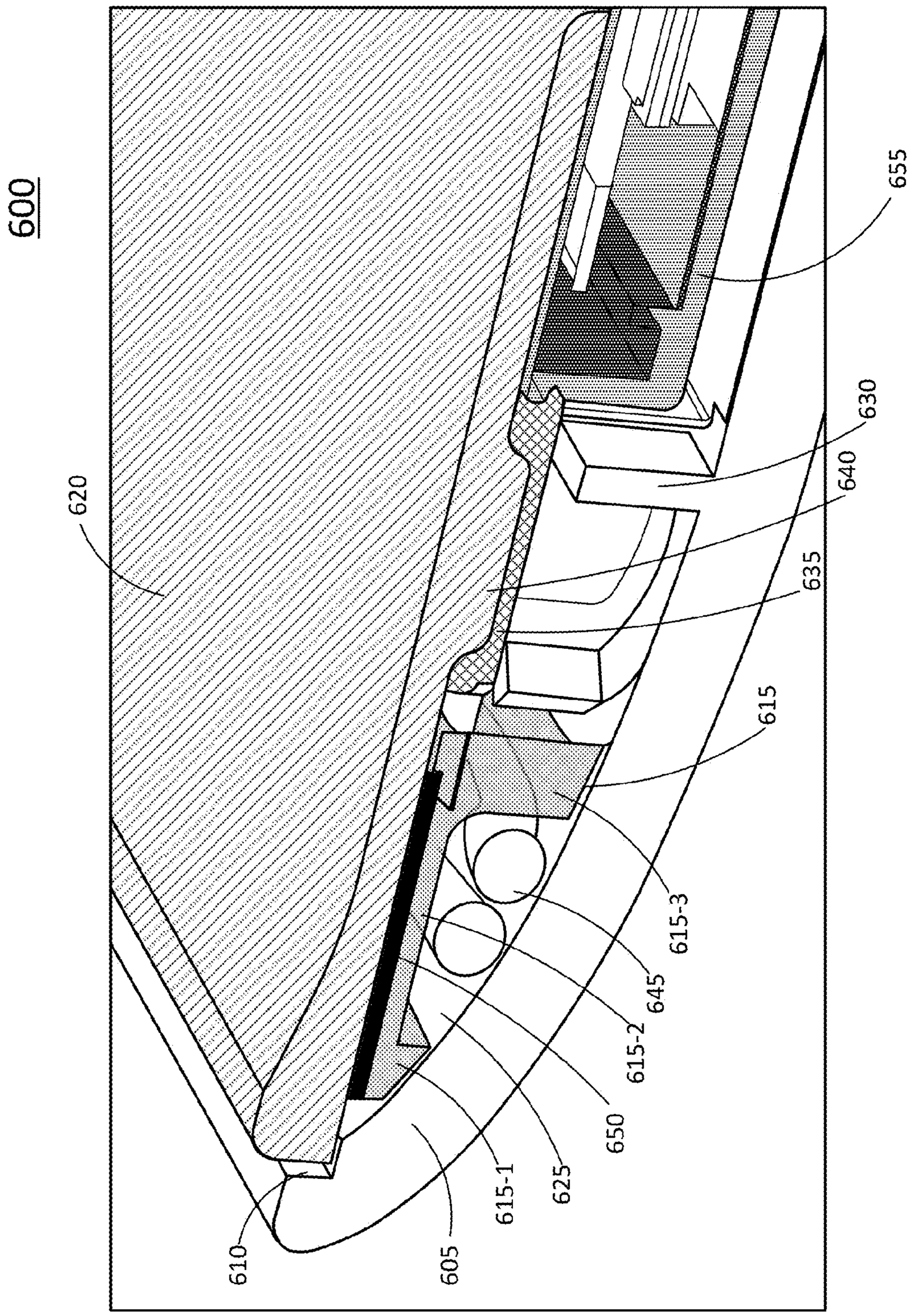
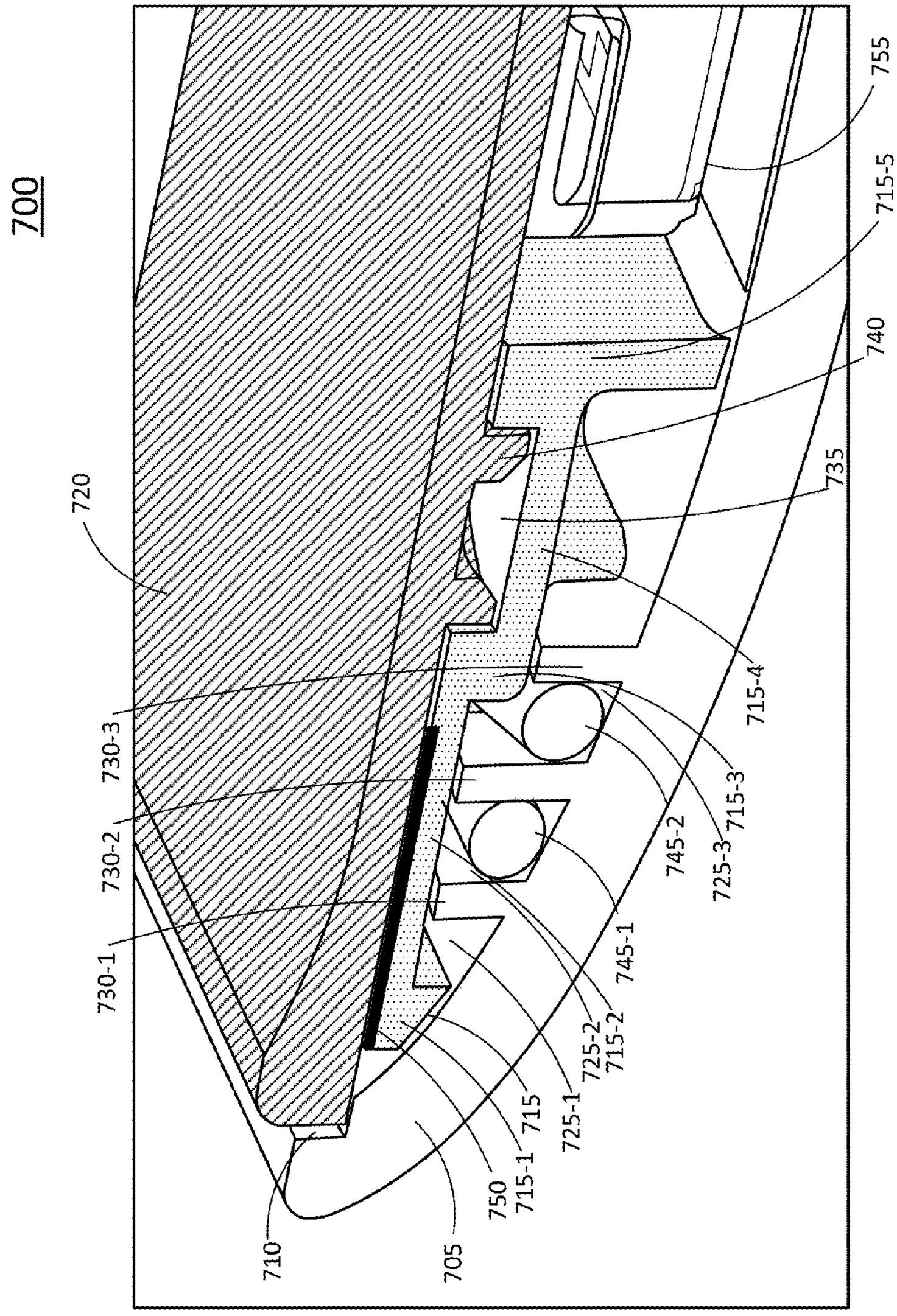



FIG. 6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720
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715-1
715
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745-1
745-2
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715-4
735
740
715-5
755

FIG. 7

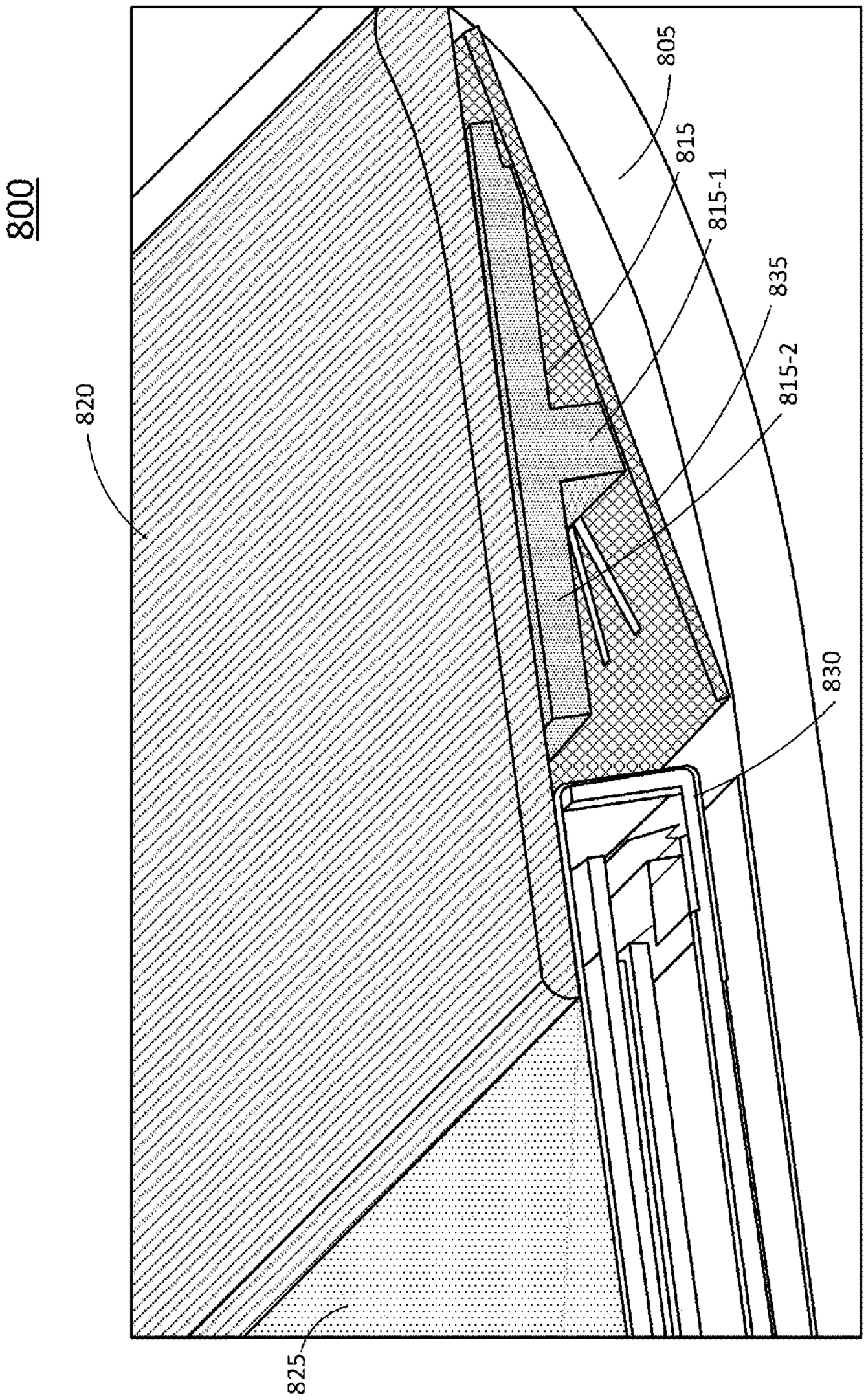
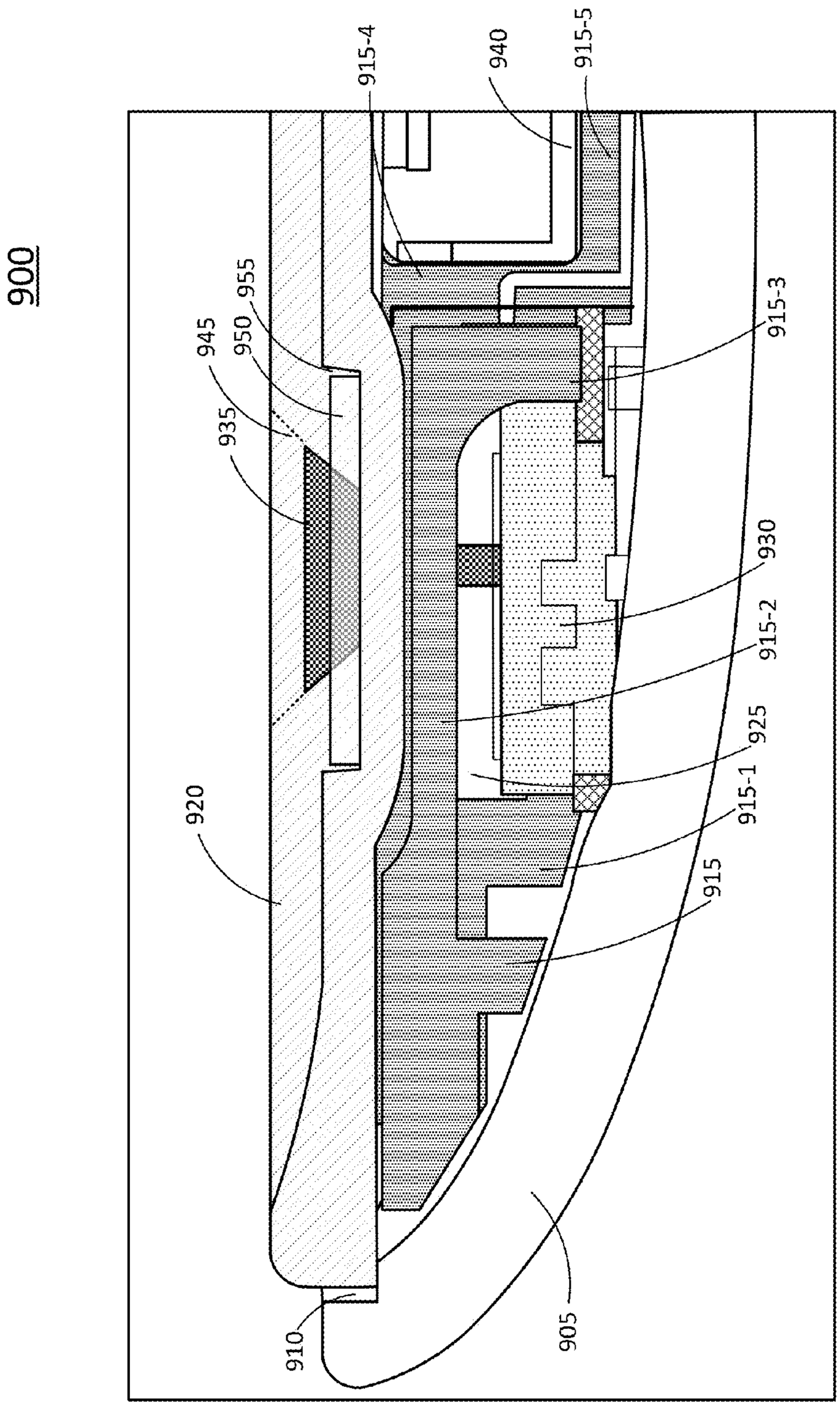



FIG. 8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915-1
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910
905

FIG. 9

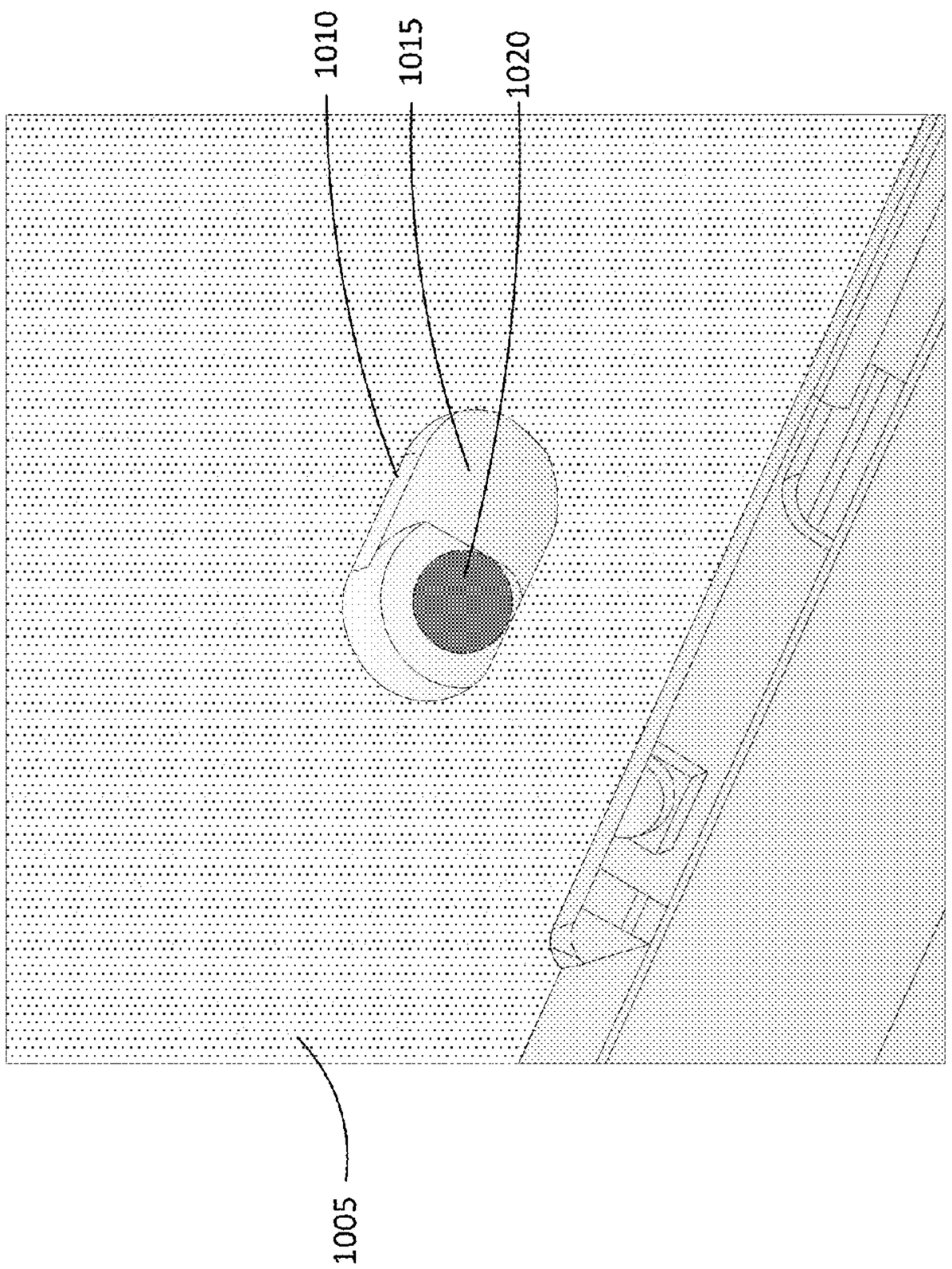
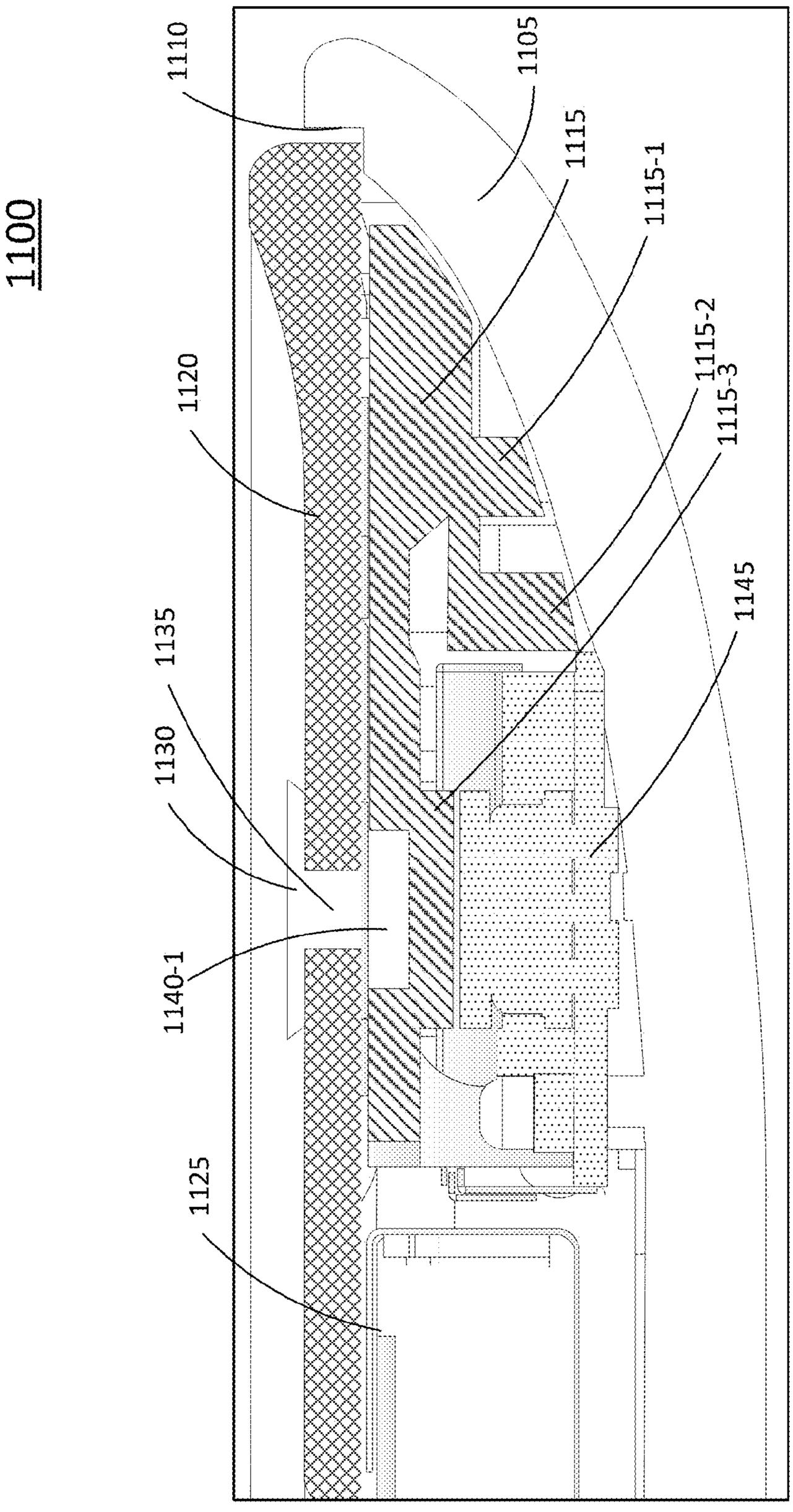



FIG. 10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1115-1
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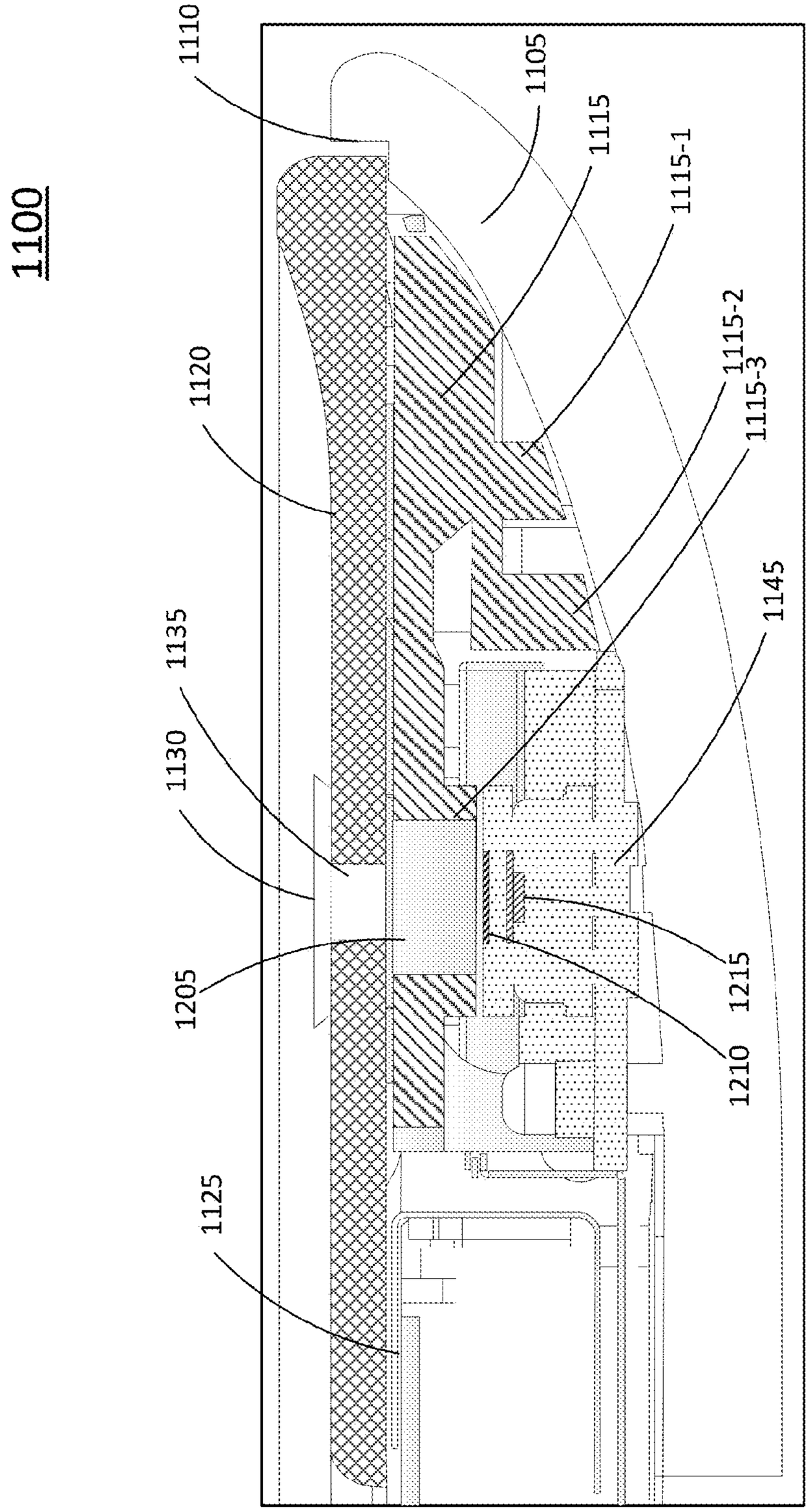
1135
1130
1140-1
1145
1125

FIG. 11


1100
1110
1105
1115
1115-1
1115-2
1115-3
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1135
1130
1145
1205
1215
1210
1125

FIG. 12

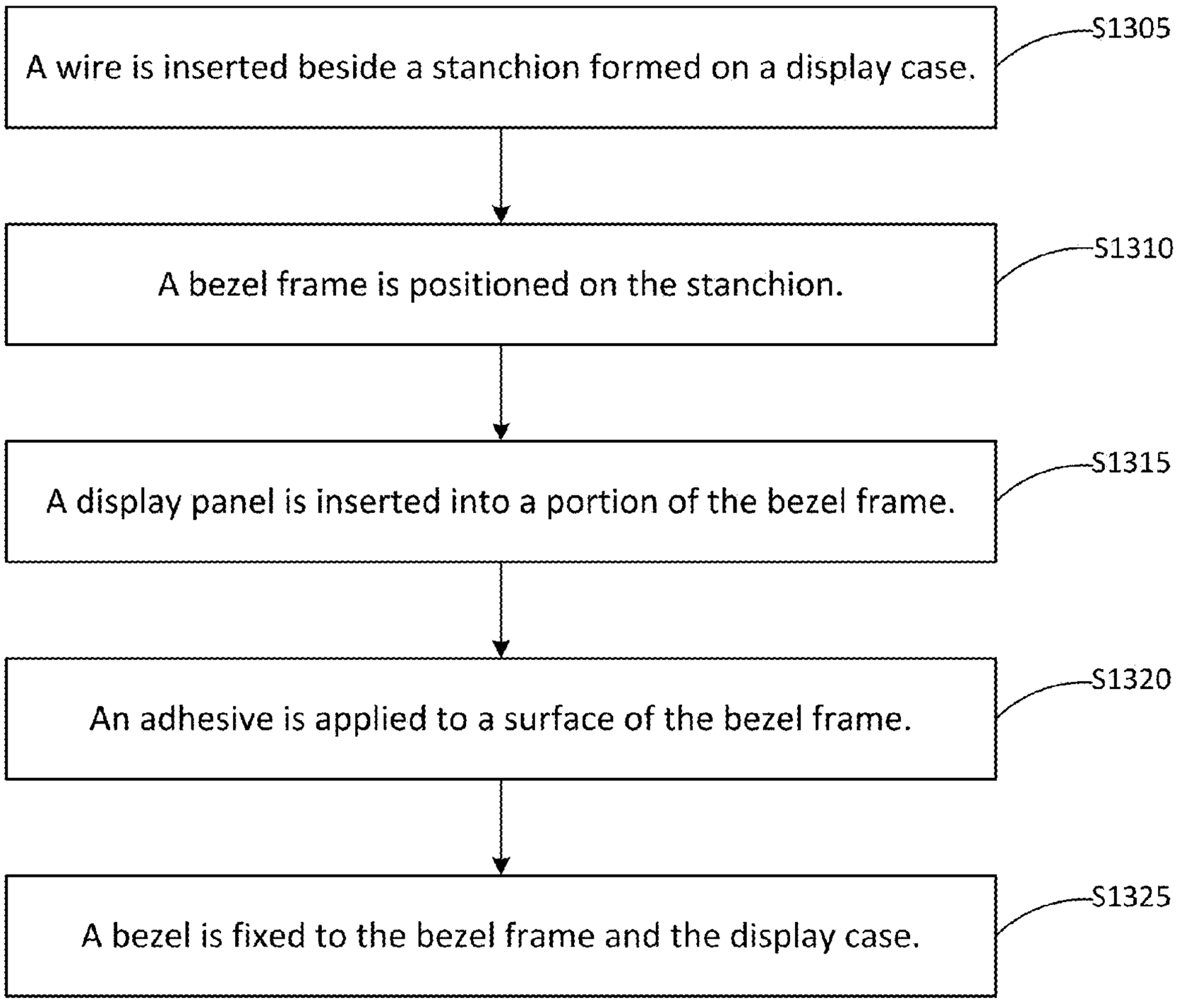
A wire is inserted beside a stanchion formed on a display case.
S1305
A bezel frame is positioned on the stanchion.
S1310
A display panel is inserted into a portion of the bezel frame.
S1315
An adhesive is applied to a surface of the bezel frame.
S1320
A bezel is fixed to the bezel frame and the display case.
S1325

FIG. 13

# COMPUTER DISPLAY INCLUDING A BEZEL

## FIELD

Embodiments relate to computer displays including bezels and frames.

## BACKGROUND

Computer displays typically include a display enclosure with a display panel, a shell and a bezel. Typically the bezel serves two purposes. The first purpose is to fix the display panel to the shell forming the display enclosure. The second purpose is to present an aesthetically pleasing finish such that the inner edges of the display panel and other components associated with the enclosure (e.g., wires and antennas) are hidden from view.

In some display enclosures there is a cavity between an edge of the display panel and an edge of the shell. Typically, the bezel is not supported across this cavity. As a result the bezel and/or any components in the cavity may be damaged if excessive force is applied to the bezel. Therefore, there is a need to provide a bezel that is supported across the cavity between an edge of the display panel and an edge of the shell.

## SUMMARY

One embodiment includes a computer display. The computer display includes a display case, a bezel, and a bezel frame in contact with the display case and the bezel, the bezel frame including at least one portion extending away from the bezel to a surface of the display case, the at least one portion defining at least a portion of a cavity.

Another embodiment includes a computer display. The computer display includes a display case, a bezel, and a bezel frame in contact with the display case and the bezel, the bezel frame including at least one portion substantially parallel to the bezel, the at least one portion defining at least a portion of a cavity.

Still another embodiment includes a method. The method includes inserting a wire beside a stanchion formed on a display case, positioning a bezel frame on the stanchion, and fixing a bezel to the bezel frame and the display case.

## BRIEF DESCRIPTION OF THE DRAWINGS

Example embodiments will become more fully understood from the detailed description given herein below and the accompanying drawings, wherein like elements are represented by like reference numerals, which are given by way of illustration only and thus are not limiting of the example embodiments and wherein:

FIG. **1** illustrates a block diagram of a cross-section of a computer display including a bezel according to at least one example embodiment.

FIG. **2-4** illustrate front views, at different stages of assembly, of a computer display according to at least one example embodiment.

FIG. **5** illustrates another block diagram of a cross-section of a computer display including a bezel according to at least one example embodiment.

FIG. **6** illustrates still another block diagram of a cross-section of a computer display including a bezel according to at least one example embodiment.

FIG. **7** illustrates yet another block diagram of a cross-section of a computer display including a bezel according to at least one example embodiment.



FIG. **8** illustrates another block diagram of a cross-section of a computer display including a bezel according to at least one example embodiment.

FIG. **9** illustrates still another block diagram of a cross-section of a computer display including a bezel according to at least one example embodiment.

FIG. **10** illustrates view of a computer display including a bezel with a microphone according to at least one example embodiment.

FIG. **11** illustrates block diagram of a cross-section of a computer display including a bezel with a microphone according to at least one example embodiment.

FIG. **12** illustrates another block diagram of a cross-section of a computer display including a bezel with a microphone according to at least one example embodiment.

FIG. **13** illustrates a method of assembling a computer display according to at least one example embodiment.

It should be noted that these Figures are intended to illustrate the general characteristics of methods, structure and/or materials utilized in certain example embodiments and to supplement the written description provided below. These drawings are not, however, to scale and may not precisely reflect the precise structural or performance characteristics of any given embodiment, and should not be interpreted as defining or limiting the range of values or properties encompassed by example embodiments. For example, the relative thicknesses and positioning of molecules, layers, regions and/or structural elements may be reduced or exaggerated for clarity. The use of similar or identical reference numbers in the various drawings is intended to indicate the presence of a similar or identical element or feature.

## DETAILED DESCRIPTION OF THE EMBODIMENTS

While example embodiments may include various modifications and alternative forms, embodiments thereof are shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that there is no intent to limit example embodiments to the particular forms disclosed, but on the contrary, example embodiments are to cover all modifications, equivalents, and alternatives falling within the scope of the claims. Like numbers refer to like elements throughout the description of the figures.

FIG. **1** illustrates a block diagram of a cross-section of a computer display including a bezel according to at least one example embodiment. As shown in FIG. **1**, the section of a computer display **100** includes a display casing **105**, a display casing cut-out **110**, a bezel frame **115**, and a bezel **120**. The bezel frame **115** may include a first portion **115-1**, a second portion **115-2** and a third portion **115-3**. The first portion **115-1**, the second portion **115-2** and the third portion **115-3** may be configured to define a cavity or gap **125**.

The first portion **115-1** may be parallel, or substantially parallel to the bezel **120**. The first portion **115-1** may be in contact with the bezel **120** and positioned between the display casing **105** and the bezel **120**. The second portion **115-2** and the third portion **115-3** may extend away from the first portion **115-1** toward the display casing **105**. The second portion **115-2** and the third portion **115-3** may be in contact with a surface (e.g., an inner surface) of the display casing **105**. An end of the second portion **115-2** and/or the third portion **115-3** may be angled in order to conform with the shape of the display casing **105**. The second portion **115-2** and the third portion **115-3** may be a different length. However, if the display casing **105** (or a portion of the display casing **105**) is

straight (or substantially straight), the second portion **115-2** and the third portion **115-3** may be a same (or substantially same) length.

The bezel frame **115** may be configured to support the bezel **120** as well as define the cavity **125**. The cavity **125** may be configured to provide a route for passing other components (e.g., wires or cables). The cavity **125** may be configured to provide an area for fixing other components (e.g., cameras and antennas). The bezel **120** and/or the bezel frame may be configured to hold or help hold other components (e.g., a display panel) in a fixed position. The bezel **120** may be configured to present an aesthetically pleasing finish for a computer device including the section of a computer display **100**. Although the cavity **125** is shown as substantially rectangular, example embodiments are not limited thereto. For example, the cavity **125** may be triangular or circular. As a result, the shape of the first portion **115-1**, the second portion **115-2** and the third portion **115-3** may vary accordingly in order to define the desired shape of the cavity **125**.

FIG. **2-4** illustrate front views, at different stages of assembly, of a computer display according to at least one example embodiment. FIG. **2** illustrates a front view of the computer display in an assembled condition such that the bezel **120** encloses other elements of the computer display **200**. As shown in FIG. **2**, the computer display **200** may be associated with, for example, a laptop computer. The computer display **200** may include the display casing **105** and the bezel **120**. The computer display **200** may further include a camera **205**, a microphone **210**, hinges **215-1**, **215-2**, a first wire bundle **220**, a connector **225**, a second wire bundle **230**, and a display panel **235**.

In some embodiments, the display panel **235** can be, for example, a touch sensitive display. In some embodiments, the display panel **235** can be, or can include, for example, an electrostatic touch device, a resistive touchscreen device, a surface acoustic wave (SAW) device, a capacitive touchscreen device, a pressure sensitive device, a surface capacitive device, a projected capacitive touch (PCT) device, and/or so forth. If the display panel **235** is a touch sensitive device, the second wire bundle **230** may include wires connected to, for example, a pressure sensor in order to communicate touch related signals to a processor associated with the computing device. If the display panel **235** is a touch sensitive device, the display panel **235** can function as an input device. For example, the display panel **235** can be configured to display a virtual keyboard (e.g., emulate a keyboard) that can be used by a user as an input device.

In some embodiments, the computer display **200** is included in a traditional laptop-type device with a traditional laptop-type form factor. In some embodiments, the computer display **200** can be (or can be included in), for example, a wired device and/or a wireless device (e.g., Wi-Fi enabled device) and can be, for example, a computing entity (e.g., a personal computing device), a server device (e.g., a web server), a mobile phone, a personal digital assistant (PDA), a tablet device, e-reader, and/or so forth. The computer display **200** can be included in a computing device configured to operate based on one or more platforms (e.g., one or more similar or different platforms) that can include one or more types of hardware, software, firmware, operating systems, runtime libraries, and/or so forth.

The camera **205** may operate to capture images (e.g., still and/or moving images). In some embodiments, the images captured by the camera **205** can be single, static images (such as a photograph) or can be images from a series (or set) of images defining a video (e.g., a progressive scan video, a National Television System Committee (NTSC) video, a Motion Picture Experts Group (MPEG) video). In some embodiments, the series of images (which can define (e.g., generate) the video) can be synchronized with, or otherwise associated with, audio (e.g., an audio signal). The sensor may detect, for example, surrounding light intensity in order to help an image processor (not shown) process images captured by the camera **205**. The camera **205** may include elements hidden under the bezel **120**. For example, the camera **205** may include elements within the cavity **125**. The microphone **210** may be configured to capture audio. The microphone **210** may include elements within the cavity **125**.

The first wire bundle **220** and the connector **225** may function together to communicate signals from the computer display **200** to, for example, a base portion (not shown) of a laptop computer. For example, the first wire bundle **220** and the connector **225** may function together to communicate image data as captured by the camera **205** to the base portion of the laptop computer, the base portion including an image processor. The first wire bundle **220** may include one or more wires from the second wire bundle **230**. Wires associated with the first wire bundle **220** and/or the second wire bundle **230** may be routed under the bezel **120**. For example, the wires associated with the first wire bundle **220** and/or the second wire bundle **230** may be routed through the cavity **125**. The base portion of the laptop computer may be attached to the computer display **200** using hinges **215-1**, **215-2**.

FIG. **3** illustrates a front view of the computer display **200** without the bezel **120**. As shown in FIG. **3**, the computer display **200** further includes bezel frame fasteners **305**, bezel guides **310**, a display panel frame **315**, and display panel fasteners **320**. The bezel frame fasteners **305** may be configured to fasten the bezel frame **115** to the display casing. In addition, the bezel frame fasteners **305** may be configured to help fasten other elements (e.g., camera **205**) in a desired position. For example, the bezel frame fasteners **305** may be one or more of a screw, a rivet, a pin and/or a clip.

The bezel guides **310** may be configured to help position the bezel **120** in a desired position. In addition, the bezel guides **310** may be configured to help fix the bezel **120** in a desired position. The bezel guides **310** may be slots, holes, dimples and/or cut-outs in the bezel frame **115** that may extend partially into and/or completely through the bezel frame **115** Alternatively, or in addition to, the bezel guides **310** may be protrusions, projections and/or nodules extending out of the bezel frame **115**. The bezel guides **310** may be any combination of slots, holes, dimples and/or cut-outs in the bezel frame **115** and protrusions, projections and/or nodules extending out of the bezel frame **115**.

The display panel frame **315** may be configured to frame or wrap the elements of the display panel **235**. The display panel frame **315** may include holes through which the display panel fasteners **320** fasten the display panel to the display casing. The display panel fasteners **320** may be one or more of a screw, a rivet, a pin and/or a clip. The display panel frame **315** may be above, below, and/or on the same plane as the bezel frame **115**.

FIG. **4** illustrates a front view of the computer display **200** without the bezel **120** and without the bezel frame **115**. As shown in FIG. **4**, the computer display **200** further includes one or more broadband antennas **405**, one or more local area network (LAN) antennas **410**, one or more routed wires **415**, and bezel frame fastener receptacles **420**.

The one or more broadband antennas **405** may be configured to transmit and/or receive 3G (third generation) and 4G (fourth generation) and the like signals. For example, the one or more broadband antennas **405** may provide for wireless communications under various modes or protocols, such as

LTE, GSM, SMS, EMS, or MMS messaging, PCS, CDMA, TDMA, PDC, WCDMA, CDMA2000, and/or GPRS, among others. The one or more broadband antennas **405** may be, for example, a printed circuit board antenna. The one or more local area network (LAN) antennas **410** may be configured to transmit and/or receive short range communications signals. The short-range communications may provide for wireless communications under various modes or protocols, such as NFC, Bluetooth and/or Wi-Fi, amongst others. The one or more local area network (LAN) antennas **410** may be, for example, a printed circuit board antenna.

The one or more routed wires **415** may communicate signals from other components (e.g., camera **205**) in the computer display **200** to a processor (not shown) via the connector **225**. The one or more routed wires **415** may be routed under the bezel **120**. For example, the wires associated with the first wire bundle **220** and/or the second wire bundle **230** may be routed through the cavity **125**. The bezel frame fastener receptacles **420** may be configured to receive the bezel frame fasteners **305** in order to help fix the bezel frame **115** to the display casing. The bezel frame fastener receptacles **420** may include internal threads, an external and/or internal lip, internal grooves and the like in order to help fix the bezel frame fasteners **305** in a desired position.

FIG. **5** illustrates another block diagram of a cross-section of a computer display including a bezel according to at least one example embodiment. As shown in FIG. **5**, the section of a computer display **500** includes a display casing **505**, a bezel frame **515**, a bezel **520**, a bezel frame fastener receptacle **530**, a bezel frame fastener **535**, and a portion of a display panel frame **540**. The bezel frame **515** may include a first portion **515-1**, a second portion **515-2** and a third portion **515-3**. The first portion **515-1**, the second portion **515-2** and the third portion **515-3** may be configured to define a cavity **525**. The second portion **515-2** may be parallel, or substantially parallel to the bezel **520**. The second portion **515-2** may be in contact with the bezel **520** and positioned between the display casing **505** and the bezel **520**. The first portion **515-1** and the third portion **515-3** may extend away from the second portion **515-2** toward the display casing **505**. The first portion **515-1** and the third portion **515-3** may be in contact with a surface of the display casing **505**. An end of the first portion **515-1** and/or the third portion **515-3** may be angled in order to conform to the shape of the display casing **505**. The first portion **515-1** and the third portion **515-3** may be a different length. However, if the display casing **505** (or a portion of the display casing **505**) is straight (or substantially straight), the first portion **515-1** and the third portion **515-3** may be a same (or substantially same) length.

Although the cavity **525** is shown as substantially rectangular, example embodiments are not limited thereto. For example, the cavity **525** may be triangular, circular or some other shape. As a result, the shape of the first portion **515-1**, the second portion **515-2** and the third portion **515-3** may vary accordingly in order to define the desired shape of the cavity **525**.

The bezel frame **515** may include a fourth portion **515-4** and a fifth portion **515-5**. The fourth portion **515-4** and the fifth portion **515-5** may define a retaining portion that together with the bezel frame fastener receptacle **530** and bezel frame fastener **535** fix the bezel frame **515** in a desired position. The fourth portion **515-4** and the fifth portion **515-5** the bezel frame fastener receptacle **530** and bezel frame fastener **535** are shown as including mechanical threads to hold the bezel frame **515** in a position with regard to the display casing **505**. Although FIG. **5** shows the bezel frame fastener **535** as the mechanism retaining the bezel frame **515** and bezel frame fastener receptacle **530** together, example embodiments are not limited thereto. For example, the fourth portion **515-4** and the fifth portion **515-5** may include a press fit configured to be pushed into the bezel frame fastener receptacle **530** resulting in retention of the bezel frame **515** with bezel frame fastener receptacle **530**.

The bezel frame **515** may include a sixth portion **515-6** configured to help position and help fix the display panel frame **540** in a desired position. For example, the sixth portion **515-6** is shown as having an L-shape. The display panel frame may be placed in a position which is contact with the sixth portion **515-6** as shown in FIG. **5**. When the bezel **520** is affixed to the bezel frame **515**, the bezel frame **515** then prevents the display panel frame **540** from changing its position. Therefore, maintaining the display panel frame **540** in the desired position. Further, the sixth portion **515-6** may be C-shaped. In other words, the sixth portion **515-6** may include an additional portion (not shown) extending from the sixth portion **515-6** and between the bezel **520** and the display panel frame **540**. This additional portion (not shown) may be in contact with the display panel frame **540** and/or the bezel **520**. Therefore, with the additional portion (not shown), the sixth portion **515-6** may fix the display panel frame **540** in the desired position without the bezel **520** being in place.

The bezel frame **515** may be configured to support the bezel **520** as well as define the cavity **525**. The bezel frame **515** may be configured to support the bezel **520** by including portions (e.g., the first portion **515-1** and **515-3**) in contact with both the display casing **505** and the bezel **520**. For example, if a force is applied to the bezel **520** on the opposite side of the bezel frame **515** in the direction (or substantially in the direction) of the bezel frame **515**, the bezel frame **515** may support the bezel **520** such that the bezel **520** does not collapse into a cavity between an edge of the display panel and an edge of the display casing **505**. The cavity **525** may be configured to provide a route for passing other components (e.g., cables or wires). The cavity **525** may be configured to provide an area for fixing other components (e.g., cameras and antennas).

The bezel frame fastener receptacle **530** may be fixed to the display casing **505**. For example, the bezel frame fastener receptacle **530** may be formed as part of the display casing **505**. In other words, the bezel frame fastener receptacle **530** and the display casing **505** may be a molded (e.g., injection molded) plastic structure. The bezel frame fastener **535** may be screwed (as shown), pressed and/or riveted, amongst other fastening mechanisms into the bezel frame fastener receptacle **530** in order to help fix the bezel frame **515** into a desired position.

FIG. **6** illustrates still another block diagram of a section of a computer display including a bezel according to at least one example embodiment. As shown in FIG. **6**, the section of a computer display **600** includes a display casing **605**, a display casing cut-out **610**, a bezel frame **615**, a bezel **620**, a receptacle **630**, a guide **635**, a protrusion **640**, cable(s) **645**, an adhesive **650**, and a display panel frame **655**. The bezel frame **615** may include a first portion **615-1**, a second portion **615-2** and a third portion **615-3**. The first portion **615-1**, the second portion **615-2** and the third portion **615-3** may be configured to define a cavity **625** through which cable(s) **645** may be routed.

The second portion **615-2** may be parallel, or substantially parallel to the bezel **620**. The second portion **615-2** may be in contact with the bezel **620** and positioned between the display casing **605** and the bezel **620**. The first portion **615-1** and the third portion **615-3** may extend away from the second portion **615-2** toward the display casing **605**. The first portion **615-1**

and the third portion **615-3** may be in contact with a surface of the display casing **605**. An end of the first portion **615-1** and/or the third portion **615-3** may be angled in order to conform to the shape of the display casing **605**. The first portion **615-1** and the third portion **615-3** may be a different length. However, if the display casing **605** (or a portion of the display casing **605**) is straight (or substantially straight), the first portion **615-1** and the third portion **615-3** may be a same (or substantially same) length.

Although the cavity **625** is shown as substantially rectangular, example embodiments are not limited thereto. For example, the cavity **625** may be triangular, circular or some other shape. As a result, the shape of the first portion **615-1**, the second portion **615-2** and the third portion **615-3** may vary accordingly in order to define the desired shape of the cavity **625**.

The bezel frame **615** may be configured to support the bezel **620** as well as define the cavity **625**. The bezel frame **615** may be configured to support the bezel **620** by including portions (e.g., the first portion **615-1** and **615-3**) in contact with both the display casing **605** and the bezel **620**. The display casing cut-out **610**, together with the bezel frame **615**, may help support and help position the bezel **620**. The bezel **620** may be affixed to the bezel frame **615** using an adhesive **650** (e.g., glue and/or adhesive tape).

The cavity **625** may be configured to provide a route for passing other components (e.g., cable(s) **645**). For example, in an assembly process for the computer display **600** the cable(s) **645** may be loosely placed against a surface of the display casing **605**. The bezel frame **615** may be positioned such that the cable(s) **645** are between the first portion **615-1** and **615-3** and the bezel frame **615** is then placed in contact with the display casing **605** resulting in forming the cavity **625**. The bezel frame **615** may be fixed in place as discussed above with regard to FIG. **5**. As a result, the cavity **625** may be used to define a path through which the cable(s) **645** may be routed within the computer display **600**. Further, by routing the cable(s) **645** in cavity **625**, the cable(s) **645** may be protected from damage during the remainder of the assembly process for the computer display **600**.

The bezel **620** may include at least one protrusion **640**. For example, the protrusion **640** may be formed as part of the bezel **620**. In other words, the bezel **620** and the protrusion **640** may be a molded (e.g., injection molded) plastic structure. The protrusion **640** may fit into the guide **635** in order to help position the bezel **620** in a desired position. Although not shown, the protrusion **640** and the guide **635** may snap together in order to help fix the bezel **620** in the desired position. The guide **635** may be a structural element of a bezel frame fastener (e.g., bezel frame fastener **535** described above). Therefore, the guide **635** together with the receptacle **630** and the protrusion may function together in order to help fix the bezel **620** into a desired position. Other elements and structures may also help fix the bezel **620** into a desired position. For example, adhesive **650** may help fix the bezel **620** into a desired position

FIG. **7** illustrates yet another block diagram of a section of a computer display including a bezel according to at least one example embodiment. As shown in FIG. **7**, the section of a computer display **700** includes a display casing **705**, a top case section **710**, a bezel frame **715**, a bezel **720**, and a display panel frame **755**. The display casing **705** includes one or more stanchions **730-1** to **730-3**. The bezel frame **715** may include a first portion **715-1**, a second portion **715-2** and a third portion **715-3**. The second portion **715-2** may be parallel, or substantially parallel to the bezel **720**. The second portion **715-2** may be positioned between the display casing **705** and the bezel **720**. The first portion **715-1** and the third portion **715-3** may extend away from the second portion **715-2** toward the display casing **705**. The first portion **715-1** and the third portion **715-3** may be in contact with a surface of the display casing **705**. An end of the first portion **715-1** and/or the third portion **715-3** may be angled in order to conform to the shape of the display casing **705**.

The first portion **715-1**, the second portion **715-2** and the third portion **715-3** may define a cavity having a first volume. The first portion **715-1**, the second portion **715-2**, the third portion **715-3**, and one or more stanchions **730-1** to **730-3** may be configured to define one or more cavities **725-1** to **725-3** each having a volume less than the first volume. The one or more cavities **725-1** to **725-3** may oriented or positioned within the cavity defined by the first portion **715-1**, the second portion **715-2** and the third portion **715-3**. The one or more cavities **725-1** to **725-3** may define paths through which cable(s) **740-1** and **740-2** may be routed. The bezel frame **715** may further include a fourth portion **715-4**, a fifth portion **715-5**. The bezel **720** may include a protrusion **740**. The third portion **715-3**, the fourth portion **715-4**, and the fifth portion **715-5** may define a receptacle **735** in which the protrusion may be inserted.

The bezel frame **715** may be configured to support the bezel **720** as well as help define the cavities **725-1** to **725-3**. The bezel frame **715** may be configured to support the bezel **720** by including portions (e.g., the first portion **715-1** and **715-7**) in contact with both the display casing **705** and/or the stanchions **730-1** to **730-3** and the bezel **720**. The display casing cut-out **710**, together with the bezel frame **715**, may help support and help position the bezel **720**. The bezel **720** may be fixed to the bezel frame **715** using an adhesive **750** (e.g., glue and/or adhesive tape).

The cavities **725-1** to **725-3** may be configured to provide a route for passing other components (e.g., cable(s) **745-1** and **745-2**). For example, in an assembly process for the computer display **700** the cables **745-1** and **745-2** may be placed against a surface of the display casing **705** in the cavity **725-1** and **725-2**. The bezel frame **715** may be positioned on the one or more stanchions **730-1** to **730-3**. The bezel frame **715** may be fixed in place as discussed above with regard to FIG. **5**. As a result, the cavity **725-1** and **725-2** may be used to define a path through which the cables **745-1** and **745-2** may be routed within the computer display **700**. Further, by routing the cables **745-1** and **745-2** in cavity **725-1** and **725-2** and positioning the bezel frame as described, the cables **745-1** and **745-2** may be protected from damage during the remainder of the assembly process for the computer display **700**.

The stanchions **730-1** to **730-3** may extend away from the display casing **705** toward the second portion **715-2** (if the bezel frame is installed). The stanchions **730-1** to **730-3** may be parallel or substantially parallel to one or more of the first portion **715-1**, the third portion **715-3** and the fifth portion **715-5**. The stanchions **730-1** to **730-3** may be perpendicular to or substantially perpendicular to one or more of the second portion **715-2** and the fourth portion **715-5**. However, the stanchions **730-1** to **730-3** may be at an angle such that the cavities **725-1** to **725-3** are some other shape (e.g., a triangular shape) than shown in FIG. **7**. The stanchions **730-1** to **730-3** may be formed as part of the display casing **705**. In other words, the display casing **705** and the stanchions **730-1** to **730-3** may be a molded (e.g., injection molded) plastic structure. The cavities **725-1** to **725-3** between the stanchions **730-1** to **730-3** may guide the cable(s) **745-1** and **745-2** in order to help position the cable(s) **745-1** and **745-2** in a desired position.

The bezel **720** may include at least one protrusion **740**. For example, the protrusion **740** may be formed as part of the bezel **720**. In other words, the bezel **720** and the protrusion **740** may be a molded (e.g., injection molded) plastic structure. The protrusion **740** may fit into the receptacle **735** in order to help position the bezel **720** in a desired position. Although not shown, the protrusion **740** and the receptacle **735** may snap together in order to help fix the bezel **720** in the desired position.

FIG. **8** illustrates another block diagram of a section of a computer display including a bezel according to at least one example embodiment. As shown in FIG. **8**, the section of a computer display **800** includes a display casing **805**, a bezel frame **815**, a bezel **820**, a display panel **825**, a display panel frame **830**, and an antenna **835**. The bezel frame **815** may include a first portion **815-1** and a second portion **815-2**. The second portion **815-2** may be parallel, or substantially parallel to the bezel **820**. The second portion **815-2** may be positioned between the display casing **805** and the bezel **820**. The antenna **835** may be positioned between the display casing **805** and the second portion **815-2**. The first portion **815-1** may extend away from the second portion **815-2** toward the antenna **835** and the display casing **705**. The first portion **815-1** may be in contact with a surface of the antenna **835**. An end of the first portion **815-1** may be angled in order to conform to an angle of the antenna **835**.

The first portion **815-1** and the second portion **815-2** may support the bezel **820** and help fix the antenna **835** in a desired position. For example, the antenna **835** may be placed at an angle with a gap between the display casing **805** and on side of the antenna **835**. The bezel frame **815** may be positioned such that the first portion **815-1** and one end of the second portion **815-2** is in contact with the antenna **835** as shown. The bezel frame **815** may be fixed in place as discussed above with regard to FIG. **5**. The result is that the antenna **835** may be wedged into place such that the antenna **835** is fixed in a desired position.

The bezel frame **815** may be configured to support the bezel **820** by including portions (e.g., the first portion **815-1** and **815-2**) in contact with the bezel **820** and the antenna **835** which is in contact with the display casing **805**. The antenna **835** may be a printed circuit board (PCB) antenna. The antenna may be sufficiently structured (e.g., rigid) to provide the aforementioned support. Alternatively, the antenna **835** may be a flexible PCB that, when placed in contact with the display casing **805**, takes on the shape of the display casing **805**. In such a configuration, the display casing **805** provides structural support for the first portion **815-1** when the first portion **815-1** is in contact with the antenna **835**.

FIG. **8** shows the first portion **815-1** somewhat centered on the second portion **815-2**. However, example embodiments are not limited thereto. For example, the first portion **815-1** may be positioned toward an end (e.g., an end closest to the display panel frame **830**). Further, the first portion **815-1** and the second portion **815-2** may be combined into a substantially single portion in a wedge like shape.

Alternatively, the bezel frame **815** may only help fix the antenna **835** in the desired position. In other words, the bezel frame **815** (in the area of the computer display **800** including the antenna **835**) may not be configured to support the bezel **820** to the extent that other portions of a bezel frame, in contact with both the bezel **820** and display casing **805**, may be configured to support the bezel **820**. Even in this alternative embodiment, a bezel frame (as a whole) according to example embodiments is configured to support the bezel **820**.

FIG. **9** illustrates still another block diagram of a section of a computer display including a bezel according to at least one example embodiment. As shown in FIG. **9**, the section of a computer display **900** includes a display casing **905**, a display casing cut-out **910**, a bezel frame **915**, a bezel **920**, a camera module **930**, a camera lens **935**, and a display panel frame **940**. The bezel frame **915** may include a first portion **915-1**, a second portion **915-2** and a third portion **915-3**. The first portion **915-1**, the second portion **915-2** and the third portion **915-3** may be configured to define a cavity **925** configured to help fix the camera module **930** in a desired position.

The bezel frame **915** may include a fourth portion **915-4** and a fifth portion **915-5** configured to help position and help fix the display panel frame **940** in a desired position. For example, the fourth portion **915-4** and the fifth portion **915-5** are shown together as having an L-shape. The display panel frame may be placed in a position which is contact with the fourth portion **915-4** and the fifth portion **915-5** as shown in FIG. **9**. When the bezel **920** is affixed to the bezel frame **915**, the bezel frame **915** then prevents the display panel frame **940** from changing its position. Therefore, maintaining the display panel frame **940** in the desired position. Further, the fourth portion **915-4** and the fifth portion **915-5** together may be C-shaped. In other words, the fourth portion **915-4** may include an additional portion (not shown) extending from the fourth portion **915-4** and between the bezel **920** and the display panel frame **940**. This additional portion (not shown) may be in contact with the display panel frame **940** and/or the bezel **920**. Therefore, with the additional portion (not shown), the fourth portion **915-4** and the fifth portion **915-5** together may fix the display panel frame **940** in the desired position without the bezel **920** being in place.

The bezel frame **915** may be configured to support the bezel **920** as well as help fix the camera module **930** in a desired position. The bezel frame may help fix the camera module **930** in a desired position by having one or more of the first portion **915-1** and the third portion **915-3** in contact with or partially in contact with the camera module. As a result, the bezel frame **915** may apply a force on the camera module **930** directed toward the display casing **905** to fix, or help fix, the camera module **930** in the desired position. Alternatively, or in addition to, a cavity defined by the first portion **915-1** and the third portion **915-3** (as shown on the left and right of the camera module **930**) and by the second portion **915-2** and the display casing **905** (as shown on the top and bottom of the camera module **930**) may be sized based on the size of the camera module **930**. The camera module **930** may then be placed in the cavity and the bezel frame **915** may be fixed in place as discussed above with regard to FIG. **5**, resulting in the camera module **930** being fixed in the desired position.

The bezel frame **915** may be configured to support the bezel **920** by including portions (e.g., the first portion **915-1** and **915-2**) in contact with the bezel **920** and the display casing **905**. The display casing cut-out **910**, together with the bezel frame **915**, may help support and help position the bezel **920**. For example, the display casing cut-out **910** may support one end of the bezel **920** in the display casing **905**. Further, the second portion **915-2** may be parallel, or substantially parallel to the bezel **920**. The second portion **915-2** may be in contact with the bezel **920** and positioned between the display casing **905** and the bezel **920**. The first portion **915-1** and the third portion **915-3** may extend away from the second portion **915-2** toward the display casing **905**. The first portion **915-1** and the third portion **915-3** may be in contact with a surface of the display casing **905** (or alternatively, a portion of the camera module **930**, which is in turn in contact with the display casing **905**). An end of the first portion **915-1** and/or the third portion **915-3** may be angled in order to conform with the shape of the display casing **905**. The first portion **915-1** and

the third portion **915-3** may be a different length. However, if the display casing **905** (or a portion of the display casing **905**) is straight (or substantially straight), the first portion **915-1** and the third portion **915-3** may be a same (or substantially same) length.

The bezel **920** may include a cut-out **945** defining a position through which the camera lens **935** may be positioned. The camera lens **935** may be fixed in place with a fixing structure **950**. The fixing structure **950** may be, for example, a press fit held in place by a cavity **955** formed in the bezel **920**.

FIG. **10** illustrates view of a computer display including a bezel with a microphone according to at least one example embodiment. As shown in FIG. **10**, a section of a bezel **1005** includes an inlayed cutout **1010**. The inlayed cutout **1010** may be configured to sound port into the microphone (e.g., microphone **210**). For example, the inlayed cutout may include a pocket **1015** and a hole **1020** in the section of the bezel **1005**. The hole **1020** may lead to an input for the microphone (e.g., microphone **210**). The hole **1020** may be offset from the pocket **1050** so a user is prevented from poking through the hole **1020** and damaging the microphone.

FIG. **11** illustrates block diagram of a cross-section of a computer display including a bezel with a microphone according to at least one example embodiment. As shown in FIG. **11**, the section of a computer display **1100** includes a display casing **1105**, a display casing cut-out **1110**, a bezel frame **1115**, a bezel **1120**, a display panel frame **1125**, an inlayed cutout **1130**, a hole **1135**, a pocket **1140-1**, and a microphone module **1145**. The bezel frame **1115** may include a first portion **1115-1**, a second portion **1115-2** and a third portion **1115-3**. The first portion **1115-1** and the second portion **1115-2** and the third portion **1115-3** may be configured to define a cavity configured to help fix the microphone module **1145** in a desired position.

FIG. **12** illustrates another block diagram of the cross-section of the computer display including a bezel with a microphone shown in FIG. **11** according to at least one example embodiment. As shown in FIG. **12**, the section of a computer display **1100** further includes a hole **1205**, a first input element of a microphone module **1210** and a second element of a microphone module **1215**. In some implementations, the first input element of a microphone module **1210** and the second element of a microphone module **1215** are combined into a single input element. The hole **1135**, the pocket **1145** (cut from the bezel frame **1115**) and the hole **1205** (cut through the bezel frame **1115**) may be offset so a user is prevented from poking through the hole **1135** and damaging the microphone module **1145**. The hole **1135**, the pocket **1140** and the hole **1205** may define a sound port into the microphone module **1145** from an external area of the computer display.

The bezel frames (e.g., bezel frames **515**, **615**, **715**, **815** and/or **915**) discussed above with regard to FIGS. **5-12**, may be portions of a single bezel frame. In other words, the bezel frames may be formed as a solitary structure with portions configured with cavities configured to route cables or wires, portions configured to support and/or position other device (e.g., antenna(s), microphones, and/or camera(s)). The bezel may be formed of a metal (e.g., aluminum) or plastic (e.g., molded plastic). The bezel may be positioned around one or more sides of a computer display. For example, there may be a separate bezel for each side (e.g., top, bottom, left and right) of the computer display. For example, there may be a bezel for two connecting sides (e.g., top and left and/or bottom and right) of the computer display. For example, there may be a bezel for three connecting sides (e.g., top, right and left) of the computer display.

FIG. **13** illustrates a method of assembling a computer display according to at least one example embodiment. As shown in FIG. **13**, in step S**1305** a wire is inserted beside a stanchion formed on a display case. For example, as shown in FIG. **7**, a wire (e.g., cable **745-2**) may be inserted beside stanchion **730-3**.

In step S**1310** a bezel frame is positioned on the stanchion. For example, as shown in FIG. **7**, bezel frame **715** is fixed on stanchion(s) **730-1**, **730-2** and/or **730-3**. Further, as shown in FIG. **5**, bezel frame **515** is fixed in position using bezel frame fastener **535** and bezel frame fastener receptacle **530**. For example, bezel frame fastener **535** may be screwed (as shown), pressed and/or riveted, amongst other fastening mechanisms into the bezel frame fastener receptacle **530** in order to help fix the bezel frame **515** into a desired position.

In step S**1315** a display panel is inserted into a portion of the bezel frame. For example, as shown in FIGS. **2** and **5**, the display panel (e.g., display panel **235**) may include a display panel frame **540** which may be inserted into a portion (e.g., bezel frame portion **515-6**) of the bezel frame **515**.

In step S**1320** an adhesive is applied to a surface of the bezel frame. For example, as shown in FIG. **7**, an adhesive **750** may be inserted between the bezel **720** and the bezel frame **715**. The adhesive **750** may help fix the bezel **720** to the bezel frame **715**.

In step S**1325** a bezel is affixed to the bezel frame and the display case. For example, as shown in FIG. **7**, the bezel **720** is fixed to the bezel frame **715** using the adhesive **750**. Alternatively, or in addition to, the bezel **720** may be fixed to the bezel frame **715** using the protrusion **740** together with the receptacle **735**.

Specific structural and functional details disclosed herein are merely representative for purposes of describing example embodiments. Example embodiments, however, be embodied in many alternate forms and should not be construed as limited to only the embodiments set forth herein.

It will be understood that, although the terms first, second, etc. may be used herein to describe various elements, these elements should not be limited by these terms. These terms are only used to distinguish one element from another. For example, a first element could be termed a second element, and, similarly, a second element could be termed a first element, without departing from the scope of example embodiments. As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

It will be understood that when an element is referred to as being "connected" or "coupled" to another element, it can be directly connected or coupled to the other element or intervening elements may be present. In contrast, when an element is referred to as being "directly connected" or "directly coupled" to another element, there are no intervening elements present. Other words used to describe the relationship between elements should be interpreted in a like fashion (e.g., "between" versus "directly between," "adjacent" versus "directly adjacent," etc.).

The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of example embodiments. As used herein, the singular forms "a," "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises," "comprising," "includes" and/or "including," when used herein, specify the presence of stated features, integers, steps, operations, elements and/or components, but do not preclude

the presence or addition of one or more other features, integers, steps, operations, elements, components and/or groups thereof.

Unless otherwise defined, all terms (including technical and scientific terms) used herein have the same meaning as commonly understood by one of ordinary skill in the art to which example embodiments belong. It will be further understood that terms, e.g., those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

Lastly, it should also be noted that whilst the accompanying claims set out particular combinations of features described herein, the scope of the present disclosure is not limited to the particular combinations hereafter claimed, but instead extends to encompass any combination of features or embodiments herein disclosed irrespective of whether or not that particular combination has been specifically enumerated in the accompanying claims at this time.

What is claimed is:

**1**. A computer display comprising:
a display case;
a bezel; and
a bezel frame entirely in an interior of the computer display and extending along an entire periphery of the display case and the bezel,
the bezel frame is in contact with the display case and includes at least one portion extending away from the bezel to a surface of the display case, the at least one portion having a surface in direct contact with the display case along the entire periphery of the display case, the at least one portion defining at least a portion of a cavity between the display case and the bezel,
the bezel frame has a surface in contact with the bezel along the entire periphery of the bezel.

**2**. The computer display of claim **1**, wherein the cavity defines a path through which a wire is routed.

**3**. The computer display of claim **1**, further comprising a camera module disposed in the cavity, wherein the bezel frame is configured to position and support the camera module.

**4**. The computer display of claim **1**, further comprising an antenna disposed in the cavity, wherein the bezel frame is configured to position and support the antenna.

**5**. The computer display of claim **1**, further comprising a display panel, wherein the bezel frame is configured to position and support the display panel.

**6**. The computer display of claim **1**, wherein the bezel is affixed to the bezel frame with an adhesive.

**7**. The computer display of claim **1**, wherein display case includes a cut-out on which the bezel is positioned.

**8**. The computer display of claim **1**, wherein the bezel includes a protrusion and the bezel frame includes a receptacle configured to receive the protrusion.

**9**. The computer display of claim **1**, wherein the bezel includes a protrusion and the bezel frame includes a receptacle, the protrusion and the receptacle configured to snap together to fix the bezel in a position.

**10**. The computer display of claim **1**, further comprising a microphone module, wherein
the bezel includes a first hole,
the bezel frame includes a pocket and a second hole such that the second hole is offset from the first hole, and
the first hole, the pocket and the second hole define a sound port into the microphone module.

**11**. The computer display of claim **1**, further comprising a camera module, wherein
the bezel frame includes a first portion defining a first cavity including a cable associated with the camera module, and
the bezel frame includes a second portion defining a second cavity including the camera.

**12**. The computer display of claim **1**, further comprising an antenna, wherein
the bezel frame includes a first portion defining a first cavity including a cable associated with the antenna, and
the bezel frame includes a second portion defining a second cavity including the antenna.

**13**. A computer display comprising:
a display case;
a bezel; and
a bezel frame entirely in an interior of the computer display and extending along an entire periphery of the display case and the bezel,
the bezel frame including at least one first portion substantially parallel to the bezel, the at least one first portion having a surface in contact with the bezel along the entire periphery of the bezel
the bezel frame including at least one second portion substantially perpendicular to the bezel, the at least one second portion having a surface in direct contact with the display case along the entire periphery of the display case, the at least one portion defining at least a portion of a cavity between the display case and the bezel.

**14**. The computer display of claim **13**, further comprising a camera module, wherein
the bezel frame includes a first portion defining a first cavity including a cable associated with the camera module, and
the bezel frame includes a second portion defining a second cavity including the camera module.

**15**. The computer display of claim **13**, further comprising an antenna, wherein
the bezel frame includes a first portion defining a first cavity including a cable associated with the antenna, and
the bezel frame includes a second portion defining a second cavity including the antenna.

**16**. The computer display of claim **13**, further comprising a microphone module, wherein
the bezel includes a first hole,
the bezel frame includes a pocket and a second hole such that the second hole is offset from the first hole, and
the first hole, the pocket and the second hole define a sound port into the microphone module.

**17**. The computer display of claim **13**, wherein the bezel is affixed to the bezel frame with an adhesive.

**18**. A method comprising,
inserting a wire beside a stanchion formed on a display case;
positioning a bezel frame on the stanchion to form a cavity between the display case and the bezel frame such that the bezel frame extends along an entire periphery of the display case and the stanchion has a surface in direct contact with the display case along the entire periphery of the display case; and
fixing a bezel to the bezel frame and the display case such that the bezel frame has a surface in contact with the bezel along the entire periphery of the bezel, wherein the bezel frame is entirely in an interior of a computer display including the display case and the bezel.

**19**. The method of claim **18**, further comprising:

before fixing the bezel to the bezel frame, inserting a display panel into a portion of the bezel frame, wherein fixing the bezel to the bezel frame includes covering a frame of the display panel.

**20**. The method of claim **18**, further comprising:

before fixing the bezel to the bezel frame, applying an adhesive to a surface of the bezel frame, wherein the bezel is affixed to the bezel frame by the adhesive.

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